Oct. 27, 1942. C. H. CLARK 2,299,737

FOOT-PROPELLED BOAT

Filed July 6, 1940 2 Sheets-Sheet 1

Fig. 1.

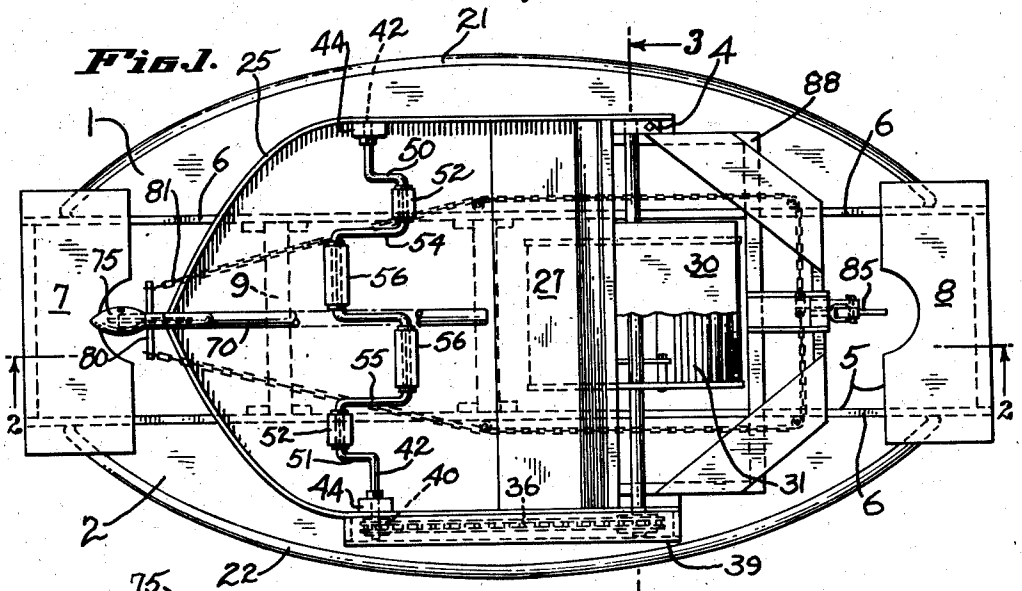



Fig. 2.

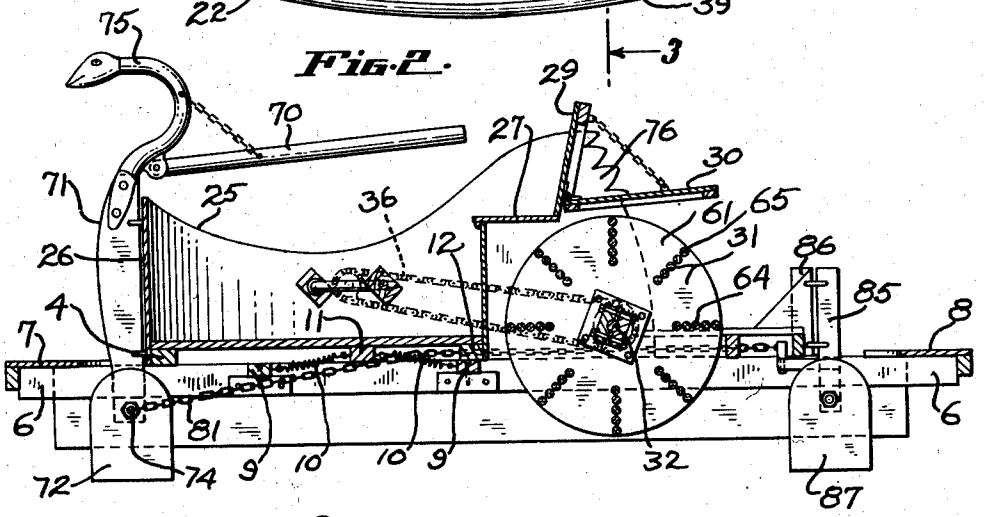
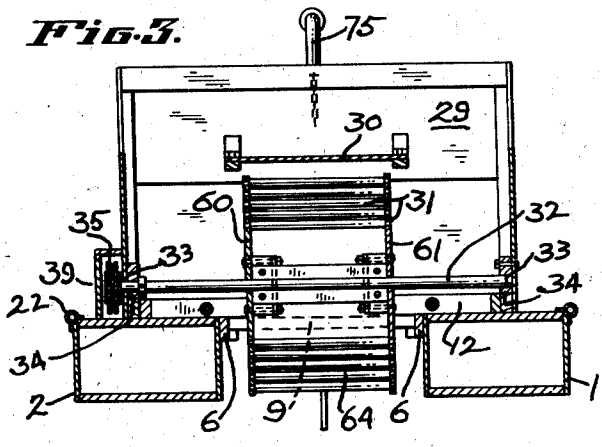



Fig. 3.




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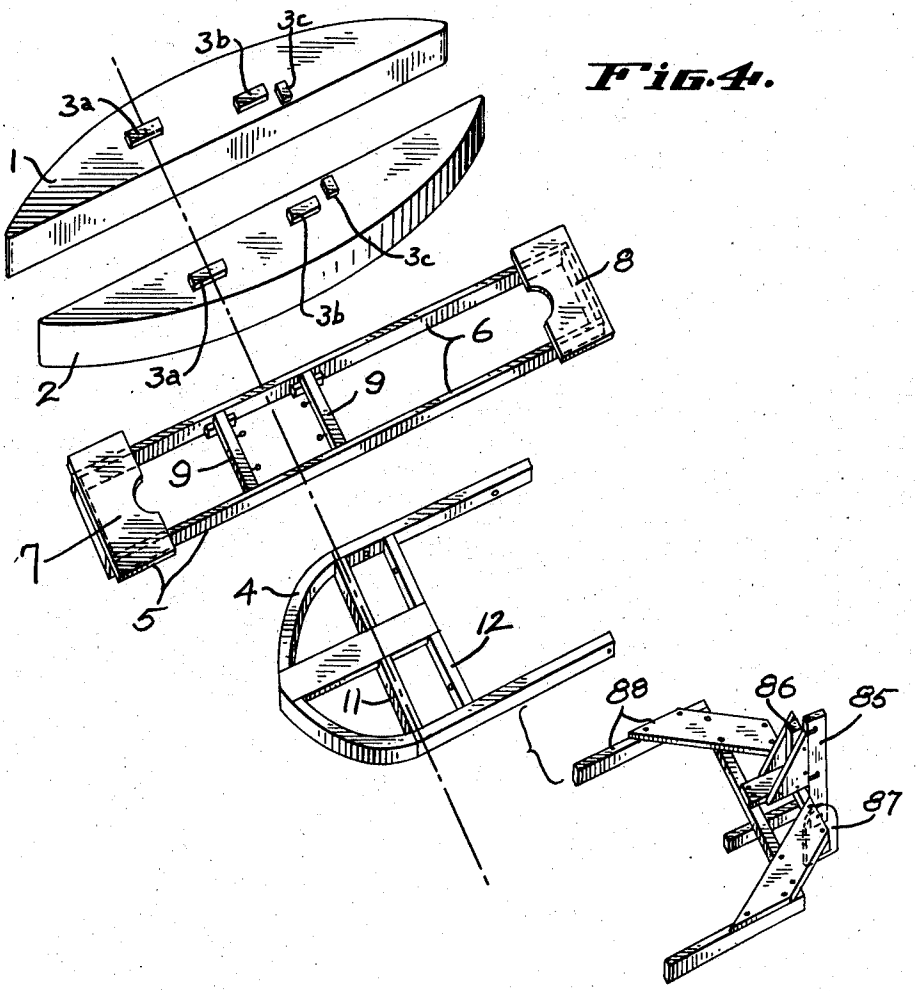



Fig. 4.

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# UNITED STATES PATENT OFFICE

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## FOOT-PROPELLED BOAT

Charles Haskell Clark, San Francisco, Calif.

Application July 6, 1940, Serial No. 344,241

3 Claims. (Cl. 115—23)

My invention relates to foot propelled boats, and more particularly to foot propelled boats having novel features making the boat ideal for use in waters such as lakes, ponds, lagoons, or other protected bodies of water, where boats are provided for amusement, for hire and for use by the general public.

Among the objects of my invention are: To provide a foot propelled boat of exceptional safety; to provide a boat that can be efficiently propelled by one, two, or three people; to provide a foot propelled boat having a novel pedal system; to provide a foot propelled boat having safety bumpers; to provide a boat having novel paddle wheel; and to provide a simple, efficient, and safe foot propelled boat for amusement purposes.

Other objects of my invention will be apparent or will be specifically pointed out in the description forming a part of this specification, but I do not limit myself to the embodiment of the invention herein described, as various forms may be adopted within the scope of the claims.

In the drawings:

Figure 1 is a top view of one preferred form of my invention adapted for use by the public in sheltered locations.

Figure 2 is a side view, partly in section and partly in elevation, of the boat shown in Figure 1.

Figure 3 is a view, partly in longitudinal section and partly in elevation, taken through the paddle wheel.

Figure 4 is an expanded view of the pontoons, bumper, body and rudder frames.

My invention may be more clearly understood by direct reference to the drawings.

I prefer to form the main structure of my boat as a catamaran comprising a pair of lateral hulls or pontoons 1 and 2. Hulls 1 and 2 are, of course, hollow.

To connect pontoons 1 and 2 I provide each pontoon with body cleats $3^a$, $3^b$, and $3^c$, to which a body frame 4 may be attached and thereby positioned, this body frame having central and rear cross members 11 and 12, respectively, being shown separated from the pontoons in Fig. 4. Between the pontoons is placed a bumper assembly 5, having longitudinal bars 6 connected by front and rear platforms 7 and 8, respectively, which extend over the top surfaces of the pontoon ends so as to position the bumper vertically with the bumper bars 6 parallel and adjacent the inside facing pontoon surfaces. spring bars 9 are provided also joining longitudinal bars 6 to which one end of four bumper springs 10 are attached, the other ends being attached to central cross member 11 of frame 4. Thus, when the bumper plates 7 and 8 are hit, the entire bumper assembly will slide along the hull under control of springs 10, thereby cushioning the blow and preventing hard contact with wharves or other boats. The outer upper edge of the hulls 1 and 2 is also provided with rubber bumpers 21 and 22.

Rising from body frame 4 is a protective enclosure 25 brought to a linear joint 26 at the front of the boat and closed by seat 27 at the rear of the boat, this seat being provided with a detachable back 29. The back of seat 29 is provided with a hinged spray plate 30 extending to the rear to cover a paddle wheel 31. Paddle wheel 31 is mounted on a paddle wheel shaft 32 mounted in bearings 33 on bearing supports 34 extending upwardly from frame 4. One end of shaft 32 extends direct through bearing support 34 and terminates in a gear 35 with which a chain 36 is engaged, this chain extending forward and covered by a protecting housing 39. The front loop of the chain engages a pedal gear 40, which is mounted on one end of a pedal crank shaft 42 journaled at opposite sides of housing 25 in crank shaft bearings 44.

The construction of the pedal crank shaft 42 is such that one, two, or three persons sitting in seat 27 may operate the crank shaft and thereby turn paddle wheel 31. To accomplish this I provide the crank shaft 42 with lateral opposed cranks 50 and 51, these lateral cranks having single width foot pedals 52 thereon. Central cranks 54 and 55 are opposed to each other and to the adjacent lateral crank, and have double width pedals 56 thereon.

While it is obvious that paddle wheel 31 may be of any well known type, I prefer to form this paddle wheel from two lateral discs 60 and 61 spaced by paddle blade assemblies 64 formed from a plurality of adjacent radially disposed dowels 65, these radially disposed dowels being alined, and only slightly spaced.

Steering of the boat is provided by a tiller 70 hinged to an upright front rudder bar 71 which is hinged to linear joint 26 of enclosure 25 and extends downwardly to terminate in a swinging front rudder 72 hinged on bolt 74 so that impact either in the forward or reverse direction with an obstacle will rotate the front rudder 72 in a vertical plane to pass over the obstruction. The top of front rudder post 71 is preferably provided with an ornament 75, in this case a repre-

sentation of the neck and head of a swan, the lateral portions of enclosure 25 extending toward platform 7 beyond seat 27 to terminate in a conventional representation 76 of swans' wings. Obviously, other designs may be utilized or the ornamental features may be entirely eliminated, if desired.

The front rudder post 71 is provided with a cross bar 80 to which rudder chains 81 are attached by springs 82, the rudder chains conveniently passing rearwardly through holes in the rear cross bar 12 of the body assembly to a pulley attached to the rear rudder assembly to operate a rear rudder post 85 hinged to a rudder post upright 86 at the rear of rudder post assembly 88 which is bolted to body frame assembly 4. The rear rudder post 85 is provided with rear rudder 87 hinged to rudder post 85 in exactly the same manner as front rudder is hinged to front rudder post 71. Movement of tiller 70 therefore moves both rudders simultaneously in opposite directions to give both forward and rear steering.

In operation, if one person is using the boat, this person may sit in the center of seat 27 and put his feet on pedals 76 to operate cranks 54 and 55. This is the ideal single person position, but it will be obvious that a single person could sit on either side of the seat 27 and operate one lateral crank and one central crank. Pushing on the pedals will, of course, rotate the crank shaft and connected paddle wheel thus propelling the boat. If two persons are in the boat, one person may sit in the center of the boat and operate the central cranks 54 and 55, and the other person may operate one lateral crank and one central crank, the central pedals 56 being wide enough for two feet to be placed thereon, or both persons may sit at opposite sides of seat 27 and each operate one lateral crank and one central crank. If three persons are using the boat, they may all pedal, the central person operating central cranks 54 and 55 and the lateral persons operating one lateral crank and one adjacent central crank. Thus, there will be two feet on each central pedal 56 and one foot on each lateral pedal 52.

I prefer to utilize the dowel type of paddle blade described herein because I have found that such a paddle blade is efficient in operation, is easy to make, and by leaving spaces between the dowels the water quickly drains from the blades through the spaces between the dowels and therefore little water is carried around the wheel. Also, the dowels upon entering the water immediately create a vacuum on the surface of the dowel facing the direction of motion of the craft, thus correspondingly increasing their effectiveness as a means of propulsion. This is not the case when a flat paddle is used.

Reference to Fig. 4 will show that my invention is readily demountable for shipment, in that by removal of only a few bolts the device separates into units comprising the pontoons, the body and frame, the bumper, the rear rudder frame, and the wheel, thus making for easy transportation.

Thus, it will be seen that I have provided a boat designed for amusement purposes, which is easily demonstrable and with the following novel features: a unit shock absorbing bumper is utilized to take up the shock of collision, both front and rear; also, both front and rear steering is employed allowing excellent control of the device under all circumstancees; and the rudders are safeguarded against breakage. Furthermore, a type of paddle is used which, by means of the vacuum it creates, pulls on the water on the vacuum side and pushes on the water on the driving side. Thus, propelling efficiency of the device is increased, and losses are reduced to a minimum by providing quick draining between the dowels which form the paddles when the paddles are moving upwardly.

I claim:

1. A boat comprising a pair of pontoons each having a substantially straight inner side, a body frame spacing said pontoons, a body mounted on said frame, a front and rear rudder journaled respectively to the front and rear of the boat; said rudders being interconnected to steer the boat in any desired direction, and a bumper assembly between said pontoons; said bumper assembly including a front platform, a rear platform, and a pair of spaced bumper bars connecting said front and rear platforms; said bumper bars being arranged in parallel relationship adjacent to the straight inner sides of said pontoons.

2. In a boat, a pair of pontoons each having a substantially straight inner side, a body frame spacing said pontoons, and a bumper assembly including a front platform, a rear platform, and a pair of spaced bumper bars connecting said front and rear platforms; said bumper bars being arranged in parallel relationship adjacent to the inner sides of said pontoons.

3. In a boat, a pair of pontoons each having a substantially straight inner side, a body frame spacing said pontoons, and a bumper assembly including a pair of spaced bumper bars resiliently connected to said frame and arranged in parallel relationship adjacent to the inner sides of said pontoons.

CHARLES HASKELL CLARK.